WHAT"S IN YOUR TANK?

We are taught about the sinister effects of contaminated avgas from the very first preflight as a student pilot. You don't have to have very much gray hair to remember that a mixture of 80 octane (red tint) and 100LL (blue tint) will yield a fuel sample that is clear (no tint). But the possibility of 80 Oct. avgas contamination disappeared around 1984, according to APOA.

The ever-present danger of fuel cross-contamination is still with us only it is more common, more frequent, and more dangerous. It is the mixture of 100LL and Jet-A fuel. It will not change the color of your fuel sample.

There is also the danger of total mis-fueling a reciprocating engine general aviation with Jet-A fuel. Fortunately total mis-fueling is uncommon, but still happens. Four people were killed in 2008, when a Cirrus SR22 departed an airport in Brazil after being fueled with Jet-A aircraft fuel. Isolated incidents are still reported around the world and here in the USA.

Technically, cross fueling is supposed to be impossible. Why, because the FAA mandated that jet-fuel trucks install a wide, spade-shaped fuel nozzle, and that vulnerable airplanes (like turbocharged twins) have restrictor ports installed into which the wide jet-fuel nozzle would not fit. This theoretically,made mis-fueling of piston aircraft with jet fuel impossible.

Jet-A is significantly heavier than avgas (6.7 lbs./gal. versus 5.85 lbs./gal.), the Jet A and 100LL will separate just like oil and water, with the Jet A at the bottom (where the sump drain is) and the 100LL at the top. That's true, but only if the contaminated fuel is allowed to sit for hours and hours. Actually, 100LL and Jet A mix quite well, and the mixture takes a quite a long time to separate.

There are at least two good ways to distinguish pure 100LL, from contaminated 100LL. One is by odor: Jet A has a very distinctive odor that is detectable by smell (it smells like old fashion kerosene) even in small concentrations. The other (and probably best) is by using the paper-towel test:

Pour a sample on a paper towel (or even a sheet of white paper, I like to keep a small scratch pad in my preflight kit), let it evaporate and see if it leaves an oily ring.

Most contamination events start out with a mishap in fuel loading, especially of trucks that are inadvertently loaded into a partial load of avgas. The smaller amount of Jet-A, the harder it is to detect.

The actual problem is not running on pure Jet A, but on running on a mixture of 100LL and Jet A. Depending on the mixture-ratio of the two fuels, the effective octane rating can be anything between 0 and 100. A mixture with a lot of Jet A and just a little 100LL might be detectable during runup. A 50-50 mix might not start to detonate until full power is applied, and the engine might fail 30 seconds or three minutes after takeoff. Just a tiny amount of Jet A contamination might produce only moderate detonation that might go un-noticed for an undetermined amount of time, slowly deteriorating your engine by un-noticed detonation.

Protect Yourself!

1. Be present when your aircraft is fueled.
2. Talk with the operator/fueler to be sure that he/she is alert and professional.
3. Check the labeling on the truck or pump.
4. Ask the driver how recently the truck has been fueled. Was the load checked?
5. You know that your tanks are now topped off, but take samples again. Look for slight oily (darker) ring from a few drops of fuel on a piece of paper.

HAVE A SAFE FLIGHT.

THIS IS YOUR NEWSLETTER: LETS HEAR FROM YOU: SEND YOUR COMMENTS, TIPS AND IDEAS TO:

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